

Hygiene Promotion: Evidence and Practice.

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What is hygiene promotion?

Hygiene Promotion can be taken to mean a structured, systematic approach to achieving widespread uptake of hand washing and faeces disposal practices that are likely to limit the transmission of intestinal pathogens and parasites. This is essentially the definition used by Oxfam (Ferron 1998) and Unicef (Curtis and Kanki 1998). Importantly, hygiene promotion is not the same as hygiene education. The distinction between hygiene education and hygiene promotion is essentially the same as that made between health education and health promotion which sees education as a subset of possible approaches to promotion (e.g. Ewles and Simnett 1998, Naidoo and Wills 2000). Hygiene education is the transfer of knowledge and understanding of hygiene practices and their associated health risks. Hygiene education activities are thus one subset of possible hygiene promotion activities.

Existing, documented, hygiene promotion strategies can be characterised as those rooted in community development, namely PHAST (Sawyer et al 1998) and Community Health Clubs (Waterkeyn 1999) and those rooted in marketing principles, namely Happy, Healthy and Hygienic (Curtis and Kanki 1998) and the Public Private Partnership (Saadé 2001, Curtis 2002). An education element is important in the PHAST and Community Health Clubs approaches and can also form part of the broad strategy used in approaches with a marketing focus (Curtis et al 2001).

Why is hygiene promotion important?

Successive estimates of diarrhoeal mortality have fallen from the 4.6 million reported in 1980. Nevertheless, global diarrhoeal deaths were estimated at 2.2 million in 2000 (WHO 2000, Kosek et al 2003), representing around 22% of under-5 mortality (Jones et al 2003) and diarrhoeal diseases remain among the three biggest killers of children under the age of 5 years (Black et al 2003).

Oral re-hydration therapy (ORT) has played an important role in reducing diarrhoeal mortality. However, rehydration works only on acute watery diarrhoeas, and has little or no effect on mortality due to persistent and bloody diarrhoeas, such as those caused by *Shigella*. A recent estimate puts the total annual number of deaths due to *Shigella* at 1.1 million, of which 61% are children under 5 years old (Kotloff et al 1999). ORT is also not able to prevent diarrhoeal morbidity or infection with intestinal parasites both of which cause suffering in their own right and can lead to malnutrition.

The combined environmental health interventions of improved water quality and safe hygiene practices (faeces disposal and handwashing) are effective means of preventing infection with intestinal pathogens and parasites. These interventions often occur together and thus assessing their individual impact can be difficult. The often-cited review by Esrey et al (1985) concluded that the median reductions in diarrhoeal morbidity attributable to improved water quality, improved sanitation and improved water availability (by implication improved hygiene) were 16%, 22% and 25% respectively. An update of this work (Esrey et al 1991) reached similar conclusions with figures of 22%, 17% and 27%. In addition, this study reported a median reduction in diarrhoeal morbidity of 33%

for hygiene promotion interventions. A review of non-vaccine interventions for prevention of childhood diarrhoea (Huttly et al 1997) reached similar conclusions, proposing that improvements to water supply, sanitation and hygiene are the most important interventions.

Esrey et al (1985 and 1991) also considered the evidence for the impact of combinations of environmental health interventions. The 1985 review reports a median reduction in diarrhoeal morbidity of 37% (range 0–82%) for the combination of improvements in water quality and availability. The 1991 review reports a median reduction of 17% in diarrhoeal morbidity from the more rigorous studies reviewed. Interestingly this review notes that in those studies reporting a health benefit, the improved water supply was piped into or near the home. Water consumption is known to increase greatly under these supply conditions (Cairncross and Feachem 1999), suggesting that the health benefits may be largely due to improved hygiene practices. The combination of improvements in water supply and sanitation was associated with a median reduction in diarrhoeal morbidity of 20% (Esrey et al 1991), however the nature of the improvements to water supply referred to is not clear.

The reviews by Esrey et al (1995 and 1991) were an important recognition of the potential public health benefits of hygiene, sanitation and water supply. However, the certainty with which conclusions can be drawn from these reviews is severely limited by the methodological shortcomings of the studies included and by a certain lack of transparency regarding the selection criteria applied to these studies. Furthermore, although comparison of the median reductions in diarrhoeal disease from different environmental health interventions reveals a consistent pattern, the picture is less clear when the range of impact reported for each intervention is considered (Huttly et al 1997). Esrey et al (1985) report ranges of 0-90%, 0-48% and 0-100% respectively for improvements to sanitation, water quality and water availability. It is likely that these ranges reflect the influence of different baseline conditions on the reductions achievable by different methods. Research currently underway at LSHTM hopes to shed more light on this issue (Clasen pers. comm.).

A recent systematic review of the evidence for morbidity reduction from hand washing from 17 published studies (Curtis and Cairncross 2003a) concluded that washing hands with soap can reduce the risk of diarrhoeal disease by 42-47%. In the absence of studies of mortality, the authors extrapolate 1.1 million deaths per year could be averted through improved hand washing practices. Curtis and Cairncross point out that their results may be inflated because of publication bias and raise the need for rigorous intervention trials to study the impact of hand washing on health. *Shigella*, although not amenable to interventions with ORT, is particularly susceptible to improvements in environmental health, notably hand washing. Khan (1982) showed that handwashing with soap reduced the number of primary cases (caught from other households) by 35% and secondary cases (arising from intrafamily transmission) by 85%. In principle the mortality reduction suggested by Curtis and Cairncross (2003a) is achievable through hand washing alone.

However, in practice, bringing about behaviour change on the scale required is likely to entail some investments in water supply to create favourable conditions for improved hygiene practices.

The multiple transmission routes that exist for intestinal infections (Cairncross and Feachem 1993) mean that provision of good quality drinking water alone is not sufficient for prevention. The provision of adequate water and sanitation to allow safe hygiene practices and faeces disposal are essential, yet the full health benefits from these interventions will only be realised when changes in hand washing and faeces disposal occur at household level. Effective hygiene promotion can play an important role in bringing about these changes. The provision of infrastructure alone is not enough, as has come to be recognised by the World Bank in the course of over two decades of experience in the sector (World Bank 2003).

The Hygiene Improvement Framework:

The Hygiene Improvement Framework is a model developed by the USAID Environmental Health Project (Appleton and van Wijk 2003). The model defines hygiene improvement as the adoption of safe hand washing and faeces disposal practices. Three elements are seen as necessary in bringing this about. These are:

- hygiene promotion
- access to hardware
- an enabling environment.

Hygiene promotion includes a variety of possible interventions that seek to change behaviour through persuading and/or educating and/or mobilising communities. Access to hardware covers household access to water supply and sanitation hardware. An enabling environment refers to organisational, financial, legal and policy changes that may be needed at local, district or national levels to support behaviour change and access to hardware.

The Hygiene Improvement Framework does not specify the mix of activities or approaches that may be used to achieve each of its elements. There are important practical differences between hygiene promotion, sanitation promotion and provision of water supply. Water supplies tend to be communal or rely to some extent on public infrastructure and their provision often has a relatively high technical content and need for technical support (DFID 1998). By contrast, in the context of developing countries sanitation is predominantly on-plot and is therefore largely a matter for household level decision making and action. Demand for improved water supply tends to be high by comparison with demand for improved sanitation. Effective hygiene promotion might make use of one or more of a variety of promotional and educational techniques to encourage behaviour change. By contrast, sanitation promotion may be best achieved by developing appropriate technical solutions, stimulating demand for these solutions and strengthening the ability of small-scale, private providers to satisfy this demand (Cairncross and Curtis 2003).

Provision of water supply in some cases may require subsidy to cover the cost of the hardware. However, subsidised latrine building programmes have met with little success in the past, and money may be better spent on developing technologies, stimulating demand and improving the supply chain than on directly subsidising the cost of the latrines to the consumer (Cairncross and Curtis 2003, DFID 1998).

Strengthening the enabling environment covers a potentially diverse range of actions at a variety of levels. These could include for example; establishing effective village-level organisations for the maintenance of water supply systems, amending fiscal policy to remove taxation on soap products making them more affordable, increasing security of land tenure to encourage households to invest in home improvements such as sanitation and legislating to ensure adequate sanitation provision for new buildings.

In all of these activities a poverty focus is important and ensuring the sustainable provision of basic water supply and sanitation to those who lack them should be a first priority for government action in the sector (DFID 1998). This means taking great care in the use of subsidies to ensure that the benefits are not captured by the better-off to finance higher levels of consumption (DFID 1998), recognising that many of the poor can, and already do pay for water and sanitation services (Cairncross and Feachem 1999). It also means taking care in the design of promotional campaigns and messages to ensure not only that the poor are reached, but that they are not alienated (Nations and Monte 1996), and recognising that the purchase of hardware items such as soap may be an affordability issue in poorer households (Hoque 2003). A difficult balance must be struck between facilitating the efficient use of household resources to bring sustainable health benefits while at the same time ensuring that these benefits also reach the poorest of the poor who may be the most vulnerable both medically and economically.

The role of government-level policy makers in hygiene improvement is context-specific and will be defined by such factors as the mix of interventions and approaches to be used and the extent to which government activities are decentralised. It is therefore not possible to present a hygiene promotion blue-print for policy makers. DFID (1998) offers the broad guidance in relation to the role of government subsidy, that if a policy decision is to be made between funding hardware and funding software greater and longer lasting results are likely to be achieved through the funding of carefully conceived software interventions.

Each element of the Hygiene Improvement Framework involves different actors and a different range of considerations and skills. The main focus for the remainder of this document is on hygiene promotion.

Rapid literature review:

A rapid review (using a limited number of databases and search terms) of peer reviewed journal articles on hygiene promotion was carried out. An initial search of the Medline and

Pubmed databases for articles containing the terms 'hygiene promotion' or 'hygiene education' produced over 300 titles. The abstracts were searched by hand for those describing the use of health promotion interventions (education and/or marketing or social marketing and/or community mobilisation) to bring about changes in hygiene practices. These articles were supplemented with other relevant articles drawn from the Leeds Health Education Database (Hubley 1997) and from reviews conducted by Loevinsohn (1990), Cave and Curtis (1999) Ahern (2000) and Hill et al (2001). Through this process eight articles were identified describing hygiene promotion interventions in community settings in developing countries and including behaviour change outcomes. Two further studies (Haggerty et al 1994, and Stanton et al 1998) have been included although they do not use any indicators of behaviour change. They were thought to be of interest because Haggerty et al report a carefully conducted randomised controlled trial while Stanton et al report the use of a variety of participatory tools. The studies identified are listed in Table 1 following which brief summaries are provided.

There is likely to be a considerable publication bias in that those interventions that produced positive results are more likely to be submitted for publication and more likely to be accepted for publication. Thus the published studies presented here are likely to be among the best available studies of the most successful interventions and this limits the scope for learning from past mistakes and failures. Nevertheless, the majority of these studies suffer from one or more of the methodological shortcomings identified by Blum and Feachem (1983), Loevinsohn (1999) or Curtis and Cairncross (2003a). These shortcomings include; non-random allocation to the intervention group, lack of baseline data, lack of an adequate control group, poor definition of outcome variables, lack of a placebo intervention, inadequate control for confounding, high loss to follow-up, poor description of the materials or process used, no discussion of possible biases or caveats, the use of one to one comparisons of control and intervention communities and a lack of p-values or confidence intervals. Some of the methodological issues arising for each study are presented. These limitations need to be kept in mind when attempting to draw lessons from the published studies.

The majority of these studies are small-scale interventions. They apply a variety of techniques to hygiene promotion but do not follow a single, recognisable, systematic approach. With the exception of Curtis et al (2001) and Pinfold et al (1996) all of these studies are based on health education. The extent to which the education is delivered in an interactive, participatory rather than didactic manner varies and is not always clear. From the information given it appears that only Lynch et al (1994) used participatory methods to encourage the intended beneficiaries to identify and prioritise health problems and solutions. All but two of the studies look for evidence of behaviour change rather than relying solely on changes in diarrhoeal morbidity as an outcome indicator. However, only Alam et al (1989) and Curtis et al (2001) observe behaviour directly. The other studies rely on self-report or proxy indicators of behaviour change.

It is difficult to draw out broad lessons from the set of studies identified, since in addition to the methodological problems described almost all are small in scale and use different methods across a variety of settings. The following points are evident:

- There is a great lack of good quality published evidence for the effectiveness of hygiene promotion in bringing about behaviour change.
- Hygiene education has achieved behaviour change in intensive, small-scale interventions. However, there are also examples of changes in knowledge that are not accompanied by changes in behaviour. In view of the likely effects of publication bias failed hygiene education interventions may be far more numerous than suggested by the results of this review.
- Hygiene promotion, using marketing methods has achieved change in a small number of behaviours across a relatively large, urban population.
- There is a lack of published evidence relating to the sustainability of behaviour change following hygiene promotion interventions.

Although there is good evidence that safer hygiene practices can reduce diarrhoeal morbidity (Huttly 1997, Curtis and Cairncross 2003a) there is only patchy published evidence of the ability to induce the desired behaviour changes through hygiene education or promotion. A similar conclusion was reached by Hill et al (2001) and Loevinsohn (1990). The latter conducted a broader review of health education interventions in developing countries and concluded not that health education does not work, but that methodologically sound evidence for its effectiveness is generally lacking.

Loevinsohn (1990) also concluded that health education seemed most effective when interventions focussed on a few messages that were delivered repeatedly in many forums, a lesson echoed in standard texts on health promotion (e.g. Tones and Tilford 2001, Ewles and Simnett 1998). This principle is followed by Curtis et al (2001) and Pinfold et al (1996) in their marketing approaches to hygiene promotion although their messages do not have an educational focus. Narrowing the focus to a small number of key messages requires that the potential practices to be promoted must be prioritised. Evidence-based arguments by Curtis et al (2000) conclude that the safe disposal of faecal material and the adequate washing of hands after contact with stools should be the priorities.

Curtis et al (2000) review the evidence concerning specific hygiene behaviours in the transmission of diarrhoeal diseases. By combining the logic of the transmission routes for faecal material (Wagner & Lanoix 1958), and the epidemiological findings from observational and intervention studies (e.g. Khan 1982, Rahaman et al 1985, Daniels et al 1990, Traore et al 1994), the authors conclude that the priority is to promote the hygiene practices that constitute the primary barriers to pathogen transmission. These are the practices that help keep faecal material out of the domestic environment.

Programme Saniya was successful in using a small number of messages to change some target practices in an urban setting in Burkina Faso (Curtis et al 2001). In this setting there was good sanitation coverage, and a piped water supply with many households having connections within their compounds. The high population density associated with an urban setting might also have eased effective communication with the

target audiences. It may be that in this approach will prove effective in a variety of different settings for example those lacking good sanitation coverage or a piped water supply. However, it may be that in some settings the channels for mass communication are less effective, and/or that a more complex set of behaviour changes are needed. The ability of this approach to deliver similar success in these settings is not known and carefully documented trials are urgently needed. The limited evidence available suggests that in rural settings community health clubs are able to deliver change across a broader spectrum of behaviours than was attempted or necessary in Programme Saniya (Waterkeyn 1999).

Authors	Date	Country	Setting	Size of intervention	Education intervention?	Participatory methods?	Marketing/Mass communication?	Hardware?	Outcome measured
Ahmed et al	1993	Bangladesh	Rural	185 households	Yes	Some participation in design of messages and materials, but not a community development approach.	No	No	<ul style="list-style-type: none"> • Nutritional status • Diarrhoea • Spot observation of cleanliness • Mother's knowledge
Alam et al	1989	Bangladesh	Rural	Mothers in one area of a village (population 2173)	Yes	No	No	Hand pumps	<ul style="list-style-type: none"> • Diarrhoea • Mother's behaviour (observed)
Curtis et al	2001	Burkina Faso	Urban	1 City (population 309771 in 1996)	Yes (but not the main focus of the intervention)	Some participatory discussion groups, but not a community development approach	Yes	No	<ul style="list-style-type: none"> • Mother's behaviour (observed)
Haggerty et al	1994	Zaire	Rural	18 villages	Yes	Some participatory discussion but not a community development approach	No	No	<ul style="list-style-type: none"> • Diarrhoea morbidity
Hoque et al	1996	Bangladesh	Rural	5 villages (880 households)	Yes	No details of education but participation in hardware intervention.	No	Hand pumps and latrines	<ul style="list-style-type: none"> • Knowledge and behaviour (questionnaire and observation) • Faecal contamination on fingertips
Jongpipitvanich et al	1998	Thailand / Bangkok	Urban	Mothers in 2 slum communities.	Yes	Participatory discussion groups - but full details of participatory process not given.	No	No	<ul style="list-style-type: none"> • Hygiene practices (interview)
Lynch et al	1994	Tanzania	Rural	1 village (population 2940)	Yes	Participatory education and analysis of health	No	No	<ul style="list-style-type: none"> • Facial cleanliness in children (spot observation).

Authors	Date	Country	Setting	Size of intervention	Education intervention?	Participatory methods?	Marketing/Mass communication?	Hardware?	Outcome measured
						problems and solutions.			
Pinfold et al	1996	Thailand	Rural	25 villages	No	Participation in project activities encouraged but not a community development approach	Yes	Water storage vessel with tap	<ul style="list-style-type: none"> • Knowledge of messages (questionnaire) • Faecal contamination on fingertips • Dishwashing practices (spot observation).
Stanton et al	1998	Bangladesh	Urban	25 slum communities in Dhaka (approx. 1000 households)	Yes	Participatory education methods used	No	No	<ul style="list-style-type: none"> • Anthropometry • Diarrhoeal morbidity
Wilson and Chandler	1993	Indonesia	Rural	65 mothers	Yes	No	No	Soap and box	<ul style="list-style-type: none"> • Soap use (reported) • Diarrhoeal morbidity

Table 1: Summary of ten hygiene promotion intervention studies.

Ahmed et al (1993) A Longitudinal Study of the Impact of Behavioural Change Intervention on Cleanliness, Diarrhoeal Morbidity and Growth of Children in Rural Bangladesh. Soc Sci Med 37 (2) 159-171.

Hygiene education messages based on germ theory and targeting 20 different hygiene practices were delivered at religious gatherings and through home visits by volunteers. The messages were based on risk and protective practices that had been identified in collaboration with volunteers from the community.

Significant improvement in nutritional status is reported in the intervention community compared with the control community. An improvement in knowledge and cleanliness scores is reported but no statistical analysis is presented. No difference in diarrhoeal morbidity is reported.

Methodological issues:

Lack of blinding.

One to one comparison of communities.

Poor case definition for diarrhoea.

Alam, N., Wojtyniak, B., Henry, F.J., and Rahaman, M.M. (1989) Mothers' personal and domestic hygiene and diarrhoea incidence in young children in rural Bangladesh. International Journal of Epidemiology 18(1):242-247.

Hygiene education targeting 4 groups of practices (exclusive use of improved water source, safer water handling, faeces disposal, hand washing) was given to mothers through home visits and group discussions in one area of a village.

Significant improvement in hygiene practices and a reduction in diarrhoeal disease are reported for the intervention population.

Methodological issues:

One to one comparison of communities.

Possible lack of blinding of observers.

The same population also received hand pumps that may have improved water availability and / or water quality. Therefore it is not possible to attribute the impact to the educational intervention.

Curtis, V., Kanki, B., Cousens, S., Diallo, I., Kpozehouen, A., Sangare, M. and Nikiema, M. (2001) Evidence of behaviour change following a hygiene promotion programme in Burkina Faso. Bulletin of the World Health Organization. 79, 518-527.

This intervention was based on a marketing approach. Following a period of formative research a small number of attractive, non-educational messages were devised and delivered to a defined target audience through carefully identified channels of communication (including radio and street theatre). However, the intervention had a number of components,

including hygiene education in 6 primary schools, weekly home visits and participatory discussions at health centres and in community meetings.

A statistically significant increase was found in hand washing with soap by mothers after cleaning faeces from a child's bottom (from 13% to 31%) and after using a latrine (from 1% to 17%).

Methodological issues:

Lack of control group because of use of mass media therefore a time series analysis was used. It is difficult to assess the impact of any one of the various intervention methods used. However, this study is one of the few published, rigorously evaluated hygiene promotion interventions.

Haggerty, P.A., Muladi, K., Kirkwood, B.R., Ashworth, A., and Manunebo, M. (1994). Community-based hygiene education to reduce diarrhoeal disease in rural Zaire: impact of the intervention on diarrhoeal morbidity. *International Journal of Epidemiology* 23(5):1050-1059.

A hygiene education intervention was used to promote 4 behaviours (removal of animal faeces from the yard, hand washing before handling food, hand washing after contact with faeces, safe disposal of children's faeces). Female volunteers were trained in the use of a variety of methods for delivering educational message to women in their communities through home visits and group discussions.

A statistically greater decrease in diarrhoeal morbidity occurred among children in the intervention group compared with the control group.

Methodological issues:

Changes in behaviour are not reported in this paper. However, the study is a rigorous randomised controlled trial.

Hoque, B.A. et al (1996) Sustainability of a water, sanitation and hygiene education project in rural Bangladesh.

This was largely a hardware intervention (provision of latrines and hand pumps). It included 'extensive hygiene education' but no details are given. The intervention community was found to have a significantly lower diarrhoea prevalence and a significantly lower relative risk of diarrhoea in children aged over five and significantly less faecal contamination on women's finger tips. There was little difference in self reported knowledge between the intervention and control group and the authors describe knowledge as poor in both areas. Improved practices were valued for non-health reasons.

Methodological issues:

One to one comparison of intervention and control area.

Lack of data on behaviour.

Jongpiputvanich, S., Veeravongs, S. and Wonsekiarttirat, W. (1998) Difficulties in conducting participatory action research to prevent diarrhoea in a slum area of Bangkok. *J. Diarrhoeal. Disease Research* 16, 187-193.

Participatory methods were used to help design and implement a hygiene education intervention aimed at mothers in two slum communities in Bangkok. The extent of participation was limited and the nature of participatory activities is not clear. The intervention focussed on 6 practices (hand washing before food handling, boiling infant's bottles, food storage under cover, disposal of garbage in dustbins, disposal of faeces in latrines and use of ORT). At follow up, mothers in the intervention group were found to be more likely to report handwashing before food handling and covered food storage.

Methodological issues:

Interview data on behaviour not triangulated with observation.

Lack of any intervention in the control group.

Small number of intervention and control groups.

Considerable loss to follow up.

Lynch, M., West, S.K., Munoz, B., Kayongoya, A., Taylor, H.R., and Mmbaga, B.B. Testing a participatory strategy to change hygiene behaviour: face washing in central Tanzania. *Transactions of the Royal Society of Tropical Medicine & Hygiene* 88(5):513-517, 1994.

Participatory community mobilisation and participatory education were used to encourage washing of children's faces as an intervention against trachoma. Children's facial cleanliness was observed and scored by trained observers at baseline, 4 months, 6 months and one year. The prevalence of clean faces increased at each point.

Methodological Issues:

No control group

lack of significance testing.

Pinfold, J.V. and Horan, N.J. (1996) Measuring the effect of a hygiene behaviour intervention by indicators of behaviour and diarrhoeal disease. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 90, 366-371.

A variety of media (posters, stickers, leaflets, comic books, songs, slide-shows, T-shirts and badges) were developed and used to promote 2 key behaviours (dish washing immediately after meals and hand washing after possible contact with faeces, before food handling and before feeding an infant). A significant reduction in faecal contamination of fingertips was

found at all study sites. This reduction was significantly greater at the intervention sites than at the control sites. Knowledge of hygiene messages was significantly greater at the intervention sites than the control sites. Intervention sites had a significantly higher prevalence of the desired dish washing practice and a significantly lower incidence of diarrhoeal disease.

Methodological issues:

Intervention not randomised.

Stanton, B.F., Clemens, J.D., and Khair, T. (1988) Educational intervention for altering water-sanitation behaviour to reduce childhood diarrhoea in urban Bangladesh: impact on nutritional status. *American Journal of Clinical Nutrition* 48(5):1166-1172.

An intensive educational programme, using interactive teaching and trained educators was used to target three key behaviours (maternal hand washing before food handling, defecation away from the house and living area and disposal of faeces and garbage out of access to children).

Incidence of diarrhoeal disease was found to be significantly lower in the intervention group, post intervention. No change was found in nutritional status.

Methodological issues:

Evaluators not blind to intervention.

Long recall period for diarrhoea.

Wilson, J.M. and Chandler, G.N. (1993) Sustained improvements in hygiene behaviour amongst village women in Lombok, Indonesia. *Transactions of the Royal Society of Tropical Medicine and Hygiene* 87(6):615-616.

An intensive education campaign using informal face-to-face discussions with mothers was used to target hand washing with soap after defecation and before eating and the removal of children's faeces from close to houses. Soap and a plastic box were also distributed.

Diarrhoea is reported as being lower following the intervention and to be lower than in a control village. Soap use is reported as increased and maintained beyond the intervention.

Methodological issues:

Lack of p-values or confidence intervals.

Long recall period for diarrhoea.

Self reported hand washing behaviour.

Formalised approaches to hygiene promotion implementation:

Knowledge and understanding of the effectiveness of the approaches to hygiene promotion described here are severely limited by the lack of rigorous evaluations and intervention trials. Work in progress by the Water and Sanitation Program of the World Bank will go some way towards addressing this by undertaking retrospective analyses of the cost effectiveness of 3 approaches (Reiff pers. comm.). However, good quality efficacy trials are urgently needed.

Participatory Hygiene and Sanitation Transformation (PHAST).

The PHAST initiative was a collaboration between UNDP, the World Bank and the WHO that began in the early 1990s. It built on existing experiences and techniques, notably SARAR (Self esteem, Associative strengths, Resourcefulness Action-planning and Responsibility) and PROWWESS (Promotion of the Role of Women in Water and Environmental Sanitation Services). SARAR is a participatory methodology that sought active involvement of intended beneficiaries in the development process. Active participation in and control over development interventions came to be seen as essential in achieving sustainable benefits. They also came to be seen by many as important goals in themselves. PROWWESS applied participatory methods to water and sanitation interventions largely in order to increase the involvement and power of women in relation to these interventions. PHAST developed participatory methods and tools to help communities change hygiene practices and improve and manage water supply and sanitation facilities.

The PHAST initiative developed a set of tools for use in exploring water, hygiene and sanitation issues with lay people. The tools were developed through a process of extensive field-testing in a number of African countries. The tools are suitable for use among populations with low levels of literacy and are largely visual. The tools can be used to provide education about disease transmission in a way that is non-didactic and non-judgemental. They can also be used to encourage discussion about local hygiene, sanitation and water problems and to explore potential solutions. A manual has been produced that sets out in an easy to follow form how to make and use PHAST tools (Sawyer et al 1998).

A series of modules has been developed based on the PHAST tools. Trained facilitators can work through these modules with groups of participants drawn from the target community. An elected group of community volunteers can be established to implement activities to address the problems identified. It is considered that hygiene messages will be learned and remembered because of the process of discovery through which they are acquired, and that behaviour and infrastructure changes will be sustained because the community will feel a true sense of ownership and control over them and will provide a supportive environment to individuals making these changes. The materials and methods are intended to achieve a balance whereby communities explore and take control over behaviours and facilities that have important health consequences, but do so within a framework and following an agenda that has been defined and driven externally.

The PHAST tools and methodology have achieved a wide geographical spread, have been supported by the Water and Sanitation Program of the World Bank and form the basis for hygiene promotion work by large NGOs such as WaterAid and Oxfam. However, there has yet to be published a rigorous evaluation of the impact achievable through PHAST in terms of behaviour change, health benefit or some measure of empowerment.

Community Health Clubs.

This approach was developed in Zimbabwe by the NGO Zimbabwe Applied Health Education and Development (ZimAHEAD). It is now being piloted in Uganda with funding from DFID. The approach shares with PHAST a belief in the value of enabling people to improve their own hygiene practices. A mixture of health education and the development of mutual support through community mobilisation is seen as important in this process. The approach uses participatory methods for health education in the belief that these are the most effective means of ensuring acceptance of new ideas. PHAST tools are used for this.

The Community Health Clubs strategy is an extension of PHAST. The originators of the approach suggest that PHAST is a useful set of tools for hygiene education, but that it has two major flaws as a strategy for hygiene promotion. These are that PHAST does not provide a structured means on which to act on the newly acquired hygiene education messages, and that PHAST is delivered to participant groups comprised of various local residents who may not provide an effective network of mutual support in taking action to address health issues. The solution offered by the Community Health Clubs strategy is to create clubs as the basis for mutual support and a sense of community and shared health values. These clubs are used to deliver not only health education but also a structured programme of follow-up activities to facilitate action in response to the health messages. The monitoring of the activities of club members helps to motivate participants who are only permitted to progress to subsequent activities on completion of earlier ones.

The Community Health Clubs strategy has a 4-phase structure for implementation. However, it is intended to be flexible in the content and order of the phases and in the order of activities within the phases.

Phase 1:

The Health Club is established with an executive committee elected by and a constitution drawn up by its members. The club meets regularly at a time and place agreed by its members and over the course of 6 months to a year a series of participatory health education modules is delivered through a trained, external facilitator. Over this period of time the club begins to operate effectively as an organisation.

Club members are issued with a membership card. This card also lists the health education topics and follow-up activities to be completed during Phase 1. Attendance and completion of

activities are recorded on the cards by the facilitator. Progress to Phase 2 is dependent on completion of Phase 1.

Phase 2:

This phase centres on the implementation of water and sanitation hardware. The content of this phase is dependent on the resources available (externally or internally). The focus of the activities is the upgrading of water sources, including establishing any necessary community organisations for operation and maintenance, and the upgrading of sanitation options. In Zimbabwe a subsidy was provided for the construction of ventilated improved pit latrines, but this may not be necessary or desirable elsewhere.

Phase 3:

This phase and the following one take the intervention well beyond the scope of hygiene promotion and into broader income generation and other development activities.

Phase 3 provides training in income generating activities to groups of club members. The originators of the Community Health Clubs strategy believe that this phase is essential if the clubs are going to continue to generate sufficient interest to remain viable after the activities of phases 1 and 2. Activities in this phase are supported by elected monitors. Each monitor represents a number of clubs and is given training to allow them to provide support in financial management.

Phase 4:

This phase is used to address an open-ended list of possible issues including adult literacy, voter education, care of AIDS orphans and the social problems associated with drug and alcohol use.

In Zimbabwe the Health Clubs were established by facilitators with training in PHAST. The structured approach is also thought to help motivate the facilitators by allowing them and their peers and managers to monitor their own progress and structure their inputs. In 2000 there were 30 trained facilitators working with approximately 350 clubs established by ZimAHEAD. Between them these clubs totalled 20,000 members. Unfortunately the activities of ZimAHEAD were suspended as a result of the social instability in the country.

Evaluation.

There is no published peer reviewed description or evaluation of the Community Health Clubs in Zimbabwe. The information presented here comes from the ongoing work of a researcher at LSHTM and from a series of conference papers (Waterkeyn 1999 and 2000, Sidibe and Curtis 2002.). Quantitative evaluation to date consists of a comparison of the

prevalence of 12 protective practices (assessed by observation) among 375 members drawn from a random selection of 25 clubs and 100 individuals drawn from households in neighbouring non-intervention sites. This evaluation was carried out after the clubs had been in existence for 2 years. All nineteen protective practices showed a statistically higher prevalence in among the intervention group. The intervention group also scored significantly higher on 8 indicators of health knowledge.

Although the results are encouraging, they must be interpreted with caution for a number of reasons. No baseline data are presented for intervention or control groups so it is not possible to draw conclusions about the extent of change in these groups. No statistical analysis is presented of the social and economic differences between the two groups (the intervention group appears richer, older, more Christian and with more female headed households). The methods by which the protective practices were observed are not detailed and neither are the questions used to assess health knowledge.

Happy Healthy and Hygienic / Programme Saniya.

Happy, Healthy and Hygienic (Curtis and Kanki 1998) is a series of 4 mini-manuals produced by Unicef. These manuals were developed based on the experience of Programme Saniya, a hygiene promotion programme in the city of Bobo-Dioulasso in Burkina Faso. The manuals set out a social marketing approach to hygiene promotion that emphasises the need to design simple attractive promotional messages to be delivered to specific audiences through appropriate channels of communication.

The Programme Saniya intervention was designed following a number of quantitative studies of risk practices for children's diarrhoeal disease in Bobo-Dioulasso and qualitative studies of motivations for hygienic behaviours among the target population. These studies took place over a period of 6 years. The main findings of the preliminary research were that unsafe disposal of children's faeces, and a lack of hand washing after contact with children's faeces were the most important risk practices. The risk practices were carried out by the mothers, sisters and maids who were responsible for the majority of child care and their behaviour was also influenced by their husbands, fathers, mothers-in-law and neighbours. Aesthetic and social concerns were found to be more important motivators of safe practices among child-carers than concerns over disease transmission.

On the basis of these findings the strategy developed by Programme Saniya was to try to replace the risk practices observed with protective practices (disposal of faeces in latrines and washing hands with soap after contact with faeces). This was to be done through developing messages aimed at the carers of children and those who influence them. The messages were to be based around the social and aesthetic benefits of the safe practices rather than on disease transmission. The messages were to be delivered through appropriate channels of communication for each segment of the target audience. Channels of communication were identified through focus group discussions.

The key elements of Programme Saniya have been described as follows (Curtis et al 2001):

Main messages:

- Hands should be washed after contact with faeces.
- Children's faeces should be disposed of in latrines.

Primary target groups:

- Mothers of children aged 0-35 months (estimated to be 40,000 women)
- Maids and other carers of children aged 0-35 months (estimated to be 15,000)
- Children of primary school age (estimated to be 20,000)

Motivators for behaviour change:

- Adult women – The safe practices are socially and aesthetically desirable.
- Children – The safe practices are socially and aesthetically desirable and prevent diarrhoea by avoiding transmission of germs.

Channels of communication:

- Neighbourhood hygiene commissions and house to house visits.
- Discussion groups in health centres and in the community.
- Street theatre.
- Local radio.
- Primary school curriculum.

The programme used a high profile launch with a municipal ceremony, mass clean up of public spaces and local radio phone-in. Following this, monthly house-to-house visits were made by teams of trained volunteers. Health centre staff were trained in participatory discussion techniques and carried out hygiene related discussions at their health centres and other community venues. A youth street-theatre group gave weekly performances of a comic play about the social and aesthetic benefits of hygiene and a comic radio serial was developed and broadcast. Joint workshops with project staff, health workers, teachers and schools inspectors were used to develop a series of 6 lessons on hygiene for use in primary schools. Teachers received training and lesson guides and participating schools were given a box of soap and 2 buckets for each class to use for hand washing.

The approach is essentially non-participatory, although participatory discussion groups were apparently held by health workers. The main input of the target audience is as a source of the information needed to plan the intervention. The aim of the intervention is to achieve specific behaviour change among a specific target group. Neither education nor capacity building are seen as important in achieving this. However, behaviour change is not imposed on the target population. Instead attractive messages are used to persuade the target audience to voluntarily adopt the desired behaviours. It is hoped that sustainability will be achieved as a result of the behaviours being adopted by the target group of their own free will because of the advantages that they perceive in them.

Evaluation:

A rigorous quantitative evaluation was carried out (Curtis et al 2001). The use of local radio as a means of mass communication ruled out the possibility of a control group and a time-series analysis was therefore used to try to distinguish the effects of the project from any underlying trends. Impact was assessed using quantitative behaviour observation. A statistically significant increase was found in hand washing with soap by mothers after cleaning faeces from a child's bottom (from 13% to 31%) and after using a latrine (from 1% to 17%).

The Happy Healthy and Hygienic manuals were written to guide field workers through the process of planning implementing and evaluating a hygiene promotion programme based on the marketing principles that informed Programme Saniya. The manuals stress the need for formative research to find out what risk practices take place in a community, to find out what motivates people to adopt safer practices and to identify target audiences and channels of communication. The formative research makes use of behaviour observation, focus group discussions and behaviour trials of safer practices and leads to the refinement of methods and messages.

The manuals encourage a planned approach to hygiene promotion with clearly defined targets of how many people will be reached with what messages, by what means and to what effect. The manuals are widely available in a number of languages, however, there is no published evaluation of an intervention following the approach set out within them. Programme Saniya itself provided the lessons on which the manuals were developed but made use of a variety of methods not set out within them and was based on period of formative research far more extended than that proposed by them.

Public Private Partnerships for Handwashing with Soap

Increased hand washing with soap could bring both public health benefits and increased profit for soap manufacturers. The public private partnerships seek to exploit the existence of this mutual benefit to harness resources (money and expertise) available in the private sector and to use these resources for large-scale generic marketing campaigns to promote hand washing with soap.

One such intervention was carried out in Central America by USAID. Another is currently under development in Ghana with LSHTM (Curtis 2002). These interventions use a combination of a mass media marketing campaign following extensive market research, interventions through schools to promote hand washing among children and interventions through health centres to promote handwashing among mothers.

There has been no published peer reviewed evaluation of the impact of these interventions although an evaluation of the Central American intervention (Saadé et al 2001) is available online. Using structured interviews with mothers Saadé et al conclude that a 10% decrease in inadequate hand washing practices by mothers was achieved in Guatemala. Smaller reductions were achieved in other countries. The intervention was most successful in urban areas.

Monitoring and evaluation:

If there is one important lesson about evaluation it is that health outcomes are not appropriate as indicators of impact (Cairncross 1991, 2003). This is because:

- changes in the health status of a population are difficult and expensive to demonstrate
- the many intervening factors between an intervention and a health outcome, make it difficult to attribute the outcome to the intervention
- health indicators do not provide a useful insight into the reasons behind success or failure.

Evaluation and monitoring are important elements of the project cycle. Monitoring activities look at individual elements of the project as it proceeds in terms of inputs and outputs and are intended to enable small adjustments to be made to the implementation process as necessary. Evaluation is a more complete overview that takes place periodically and less frequently, often at the end of a project. The lessons from evaluation may be used to inform a continuation of the work or may be applied to similar interventions elsewhere. In order to enhance credibility evaluation is often undertaken by an agency external to the project. Collecting, analysing, disseminating and acting upon monitoring and evaluation data are potentially expensive and time-consuming activities. This can result in pressure from funders to collect the minimum amount of information to allow informed decision-making. A review of World Bank interventions in the sector noted that project managers are frequently limited to only six indicators (World Bank 2003). Although there is a pressing need for high quality research to demonstrate the effectiveness of different approaches to hygiene and sanitation promotion, this is not the purpose of monitoring and evaluation.

Provision of water and sanitation hardware alone is not sufficient to bring about changes in health. Evaluation must therefore go beyond measuring the hardware installed. Health impact is the ultimate aim of hygiene promotion interventions. However, the water and sanitation sector has a long history of evaluations that have sought and failed to demonstrate the anticipated health benefits, and as early as 1976 a report recommended that the World Bank should cease funding studies that attempted to isolate causal relationships between water supply and health (World Bank 1976). Similarly, Blum and Feachem (1983) reviewed

the literature on water and sanitation interventions. They listed eight frequent methodological errors in health impact studies and found one or more of these in each of the studies they reviewed.

There is a variety of problems associated with measuring the health benefits of hygiene promotion. Routine health service data are rarely if ever sufficiently reliable or complete to be used for this purpose. Population-based surveys are expensive and time consuming, requiring a large sample size, and when oral reports are used there are problems associated with culturally different definitions of diarrhoeal disease and with the length of the recall period. A recall period of greater than 48 hours is regarded as unreliable (Blum and Feachem 1983). Diarrhoeal disease incidence is influenced by a large number of factors outside the control of most interventions (e.g. diet and climate) and can also fluctuate from year to year. Furthermore, relying on measures of health impact rarely provides much in the way of useful information to explain successes or failures.

Measurement of parasite loads in people or parasite eggs in soil can avoid the problems associated with the definition and recall of diarrhoeal disease. However, the problem of demonstrating a health outcome remains. There is a variety of different parasites whose transmission is affected in different ways by sanitation and hygiene as well as other factors that may be beyond the scope of the project. Parasite data can thus be hard to interpret (e.g. Muller et al 1989, Feachem et al 1983). The accurate measurement of parasite loads requires specialist skills and equipment and for some parasites, such as giardia, repeated tests may be needed for an accurate diagnosis (Benson 1995). As with diarrhoeal disease, the measurement of parasite loads does not provide useful information on the reasons for success or failure of an intervention.

The alternative to measuring health outcomes is to base evaluation directly on the patterns of hygiene behaviour, the links between behaviour patterns and health outcomes having already been established in the literature. This approach is cheaper and quicker, and because its focus is further up the causal chain outcomes can more readily be attributed to the effects of an intervention. Such an approach is now widely accepted and recommended (e.g. Boot and Cairncross 1993, Almedom et al 1997, DFID 1998, Shordt 2000).

Measuring hygiene behaviour is conceptually straightforward but in practice can be difficult, not least because the behaviours in question are often very private and carry moral connotations (Boot and Cairncross 1993, Curtis 1998). Two questions that arise immediately are what to measure and how to measure it. The answers must depend to a great extent on what the project has set out to achieve. This will vary from project to project, underlining the importance of basing project design on the findings of formative research and a situation analysis. However, it is likely that the promotion of hand washing at critical times and the safe disposal of faeces will lie at the heart of the project. In any case, the principles applied to evaluating these behaviours could be applied to other behaviours if desired.

There are essentially two means of eliciting information about hygiene practices; asking questions and making observations. Neither of these is perfect since the data collected in either case are likely to be influenced by the process of data collection. Experience has shown that interview and questionnaire data are more likely to elicit information reflecting what the respondent believes the interviewer would like to hear than the normal behaviour of the respondent (Stanton et al 1987). Observation however is very labour intensive and suffers from the problem that those being observed alter their behaviour in the presence of the observer (Cousens et al 1996). Nevertheless, work on hygiene behaviour in both developed and developing country settings suggests that, if collected appropriately, observational data can give a useful indication of the incidence of hygiene practices (Curtis et al 1993, 2003).

The key to collecting useful data on hygiene practices lies in being aware of the limitations and likely biases of different methods and in using a combination of data collection methods such that the findings of one can be used to confirm or question the findings of another (the process of triangulation). Direct observation of behaviour can be supplemented by spot observations of proxy indicators (e.g. presence of soap at a convenient point for handwashing or presence of faeces on the ground near the house). Participatory methods such as 3-pile sorting and pocket voting (Shordt 2000) can be as alternatives or additions to interviews or focus group discussions to elicit information on knowledge and behaviour practices. Work is currently in progress at LSHTM to develop a small set of specific and measurable indicators for use in evaluating hygiene promotion interventions (Bostoen pers. comm.)

Participatory tools can be used as part of a process of giving the intended beneficiaries control over project evaluation and thus using project evaluation as a means of mobilising and empowering communities. However, the use of such tools does not in itself achieve this. The extent to which intended beneficiaries should define and control the evaluation process is a philosophical question the answer to which will depend on the ethos of a particular project. The Methodology for Participatory Appraisal (van Wijk-Sijbesma 2001) has been developed with the intention of allowing data collected using participatory methods to be combined and quantitatively analysed. However, a genuinely participatory approach may not be compatible with the rigorous sampling strategy needed to ensure data are representative. This is because it is not always clear who is represented by the sample of people who choose to take part in participatory activities (Parry and Wright 2003). The logic of evaluation also requires the collection of baseline data immediately the project begins (World Bank 2003), and it has been recommended that these data should include structured observations of behaviour (DFID 1998). This may clash with the time needed to build the relationships with the intended beneficiaries that would be needed to support fully participatory methods.

The following publications provide useful tools and methods for collecting data on hygiene practices:

- Almedom , M., Blumenthal, U., and Manderson, L., (1997). Hygiene Evaluation Procedures: Approaches and Methods for Assessing Water and Sanitation-Related Hygiene Practices.
- Boot, M.T., and Cairncross, S. (eds) (1993) Actions speak: The study of hygiene behaviour in water and sanitation projects. IRC International Water and Sanitation Centre and London School of Hygiene and Tropical Medicine.
- Curtis and Kanki (1998) Happy, healthy and hygienic- How to set up a hygiene promotion programme: parts 1 – 4. Unicef and London School of Hygiene and Tropical Medicine.
- Ferron, S., Morgan, J., and O'Reilly, M. (2000) Hygiene Promotion: A Practical Manual for Relief and Development. Intermediate Technology Publications London on behalf of *CARE International*
- Shordt, K. (2000) Action Monitoring for Effectiveness: Improving water, hygiene & environmental sanitation programmes. IRC, Delft, Netherlands. (see especially volume 2 for hygiene programmes).

Lessons learned:

The lack of high quality published research and rigorous project evaluations in the field of hygiene promotion adds to the difficulty of drawing out general lessons from experience in the sector to date. This problem is also noted in a review by the World Bank (World Bank 2003) which concludes that although many World Bank projects claim a health benefit, few have baseline or monitoring data to support their claims. Nevertheless there are a number of reports that bring together the results of field experience from different projects and locations (e.g. Van Wijk and Murre 1998, Billig and Bendahmane 1999, Favin and Bendahmane 1999, Appleton and van Wijk 2003, Shordt 2003).

The variety of experiences that comes out of these studies suggests that there is no single blueprint for hygiene promotion and that different strategies may be needed depending on the target group, the locality and the behaviour as well as the existing prevalence of the desired practice within the population. Therefore it is always important to begin by developing a thorough understanding of the practices of the target group and of the beliefs and physical, economic and social conditions that underlie them.

That knowledge is not sufficient to bring about behaviour change is a recurrent finding from experience amongst medical practitioners as well as lay audiences (Shordt 2003). From this follows the experience that one-way health information campaigns can be a waste of

resources. Messages must be designed to present achievable solutions to perceived problems among target groups. Health impacts are often not good motivators for behaviour change, however there are a number of other benefits of safer hygiene practices that allow health benefits to be linked to social goals in a way that can be motivating. These include status, smell, aesthetics and privacy. Preliminary research carried out for the Public-Private Partnership in Ghana and Kerala suggests that making people feel they have something undesirable on their hands after contact with faeces may be a key element in changing their behaviour (Curtis 2002).

Mass media campaigns have so far worked best in urban areas (Saadé, et al 2001), possibly because of the combination of a dense population, access to mass media and access to other facilitating hardware such as soap, water and latrines. Identifying the target audiences is important. These may include groups who are not themselves priority targets for behaviour change. In Guatemala for example it was found to be important to target fathers as this group was concerned about the additional cost of using water for improved hygiene practices. It has also been suggested that particular groups, such as new mothers, may be especially amenable to appropriate behaviour change messages and so may be an effective target audience (Curtis 2002). Curtis (2002) also suggests that for mass media campaigns to achieve results, in addition to identifying the audiences, messages and channels of communication, the campaign should aim for the target audience to receive the campaign message at least 6 times per month in order to generate the critical mass of stimulus needed for behaviour change. However no evidence is presented to support this lesson which seems to be based on anecdotal evidence from the commercial sector. Furthermore the optimal duration for such a campaign is not specified.

Although hardware improvements alone are not sufficient to bring maximum health benefits, hygiene promotion is thought to have the greatest likelihood of success when it is combined with appropriate improvements in water supply and sanitation hardware. The most effective order for these interventions, if there is one, has not been established. Experience in Zimbabwe with Community Health Clubs has been that hygiene promotion can be beneficial if introduced even before improvements in hardware are begun (Appleton and van Wijk, 2003). A supportive legislative and policy framework can be important in achieving hardware improvements (Favin and Bendahmane 1999). To this end, demonstration projects, though not the most effective way of producing widespread and lasting behaviour change, have proved useful advocacy tools for use with policy makers (Appleton and van Wijk, 2003).

There is no single proven approach to hygiene behaviour change that reigns supreme to the exclusion of others. Nor is there likely to be. From general health promotion practice it is recognised that good results are only likely to be achieved when:

- The intended changes are based on the body of behavioural theory that underpins health behaviour and change (summarised in Nutbeam and Harris 2000).
- Promotion practices are based on approaches in keeping with sound theory.

- A mixture of carefully selected approaches is used (Ewles and Simnett 1998, Naidoo and Wills 2000).

It follows that the best results in hygiene promotion are likely to be achieved through using a mixture of activities and communication channels to reach different groups in numerous ways and that educational, community capacity building and social marketing approaches should be combined (Shordt 2003, Favin and Bendahmane 1999). However there have been few attempts to systematically combine different hygiene promotion approaches. Thus neither the optimal mix of activities nor the additional benefits from additional activities are known (Billig and Bendahmane 1999). DFID (1998) cautions that local partners in intervention programmes may become weary and sceptical if a succession of new approaches are introduced and that for this reason it may be more productive to offer rather than insist on a particular approach and to ensure that local capacity is built to implement it.

In addition to the intensity of the activities, time appears a key element in achieving sustainability (Shordt 2003). Evidence suggests that the length of an intervention is more important than the time elapsed since project activities ended in determining the sustainability of behaviour change. The optimal duration for intervention activities is not known but little is to be expected from interventions with a time frame of less than one year (Shordt 2003). This implies that projects may benefit from linking into existing institutions such as the education system, primary health care system, health promotion centres and processes and general community development schemes in order to achieve continuing inputs beyond the project cycle.

The drawing together of experiences, ideas and opinions from a number of interventions has thus provided some potentially useful rules of thumb to guide ongoing work in hygiene promotion. However, there is a pressing need for more rigorous evaluations of projects as well as primary research and desk studies to allow us to answer such questions as:

- What is the optimum mix of different activities and approaches?
- What additional benefits can be expected from additional activities?
- What magnitude of behaviour change can be reasonably be expected from a mass communication campaign and over what time period?
- What magnitude of behaviour change can be reasonably be expected from a community development approach and over what time period?
- What is the reach of different approaches, what sections of the population are missed and what are the public health implications of this, especially for the poorest?
- What useful role can education play and under what circumstances and in what form should it be delivered?

Curtis and Cairncross (2003b) underline the lack of progress made in understanding diarrhoeal diseases over the past one and a half centuries, pointing out that the best

strategies for promoting hygiene and sanitation are still not known and posing a number of additional important research questions including:

- What is the relative importance of human and animal faeces in disease transmission?
- What is the relative importance of hand, food, flies and other objects as vectors for disease transmission?

Manuals and resources:

A number of manuals relating to hygiene promotion already exists. Curtis and Kanki (1998) provides step by step guidance for field workers on how to set up a hygiene promotion programme using a marketing approach to behaviour change. Sawyer et al (1998) provides similar guidance for the use of PHAST tools for participatory hygiene education. DFID (1998) provides practical guidance for water supply and sanitation programmes, but also includes a section on hygiene promotion using a marketing approach. Ferron et al (2000) is aimed primarily at field workers in emergency settings, however, most of the approaches and tools described are equally applicable in a development context. This manual provides guidance on participatory and marketing approaches, as well as monitoring and evaluation and the training of field staff. A Unicef manual on school sanitation and hygiene is also available at http://www.irc.nl/sshe/resources/ch_intro.html

In addition to these manuals there are a number of web-based resources relating to hygiene promotion. Van Wijk, and Murre, (1998) <http://www.unicef.org/programme/wes/pubs/behav/behav.htm> discusses some of the reasons why conventional hygiene education is unlikely to succeed. This document also discusses some of the factors that have been suggested to influence behaviour change and provides a brief outline of ways in which programmes and policy makers might help to bring about this change. Appleton and van Wijk, (2003) <http://www.irc.nl/page.php/16> is aimed at both policy makers and practitioners. This resource gives an overview of many of the main issues relating to hygiene promotion as well as direct web links to a large number of relevant sources of information including the World Bank's 'Guide to water, sanitation and hygiene at a glance'

Forthcoming manuals / toolkits:

Several new manuals or toolkits are also planned or are currently in the process of being written. These include; a practical manual on public-private partnerships for promoting hand washing with soap (Curtis, pers. comm.), a tool kit for hygiene and sanitation promotion in schools (van den Berg, pers.com) and a manual on hygiene promotion programming (Evans, pers. comm.). The latter of these is intended to give strategic guidance to those working at the programming level while recognising that there is no blueprint for hygiene promotion. It places hygiene promotion in the context of the Hygiene Improvement Framework and thus includes consideration of programming for sanitation promotion as well as hand washing. It is

also intended to draw heavily on case study material. The planned launch date for this manual is March 2004.

The scope for another manual:

If another new manual is to make a useful contribution to this already crowded environment, in the absence of significant new evidence or ideas it will be essential to define very clearly the target audience and the specific, currently un-met needs of this audience. Failure to do so can only result in yet another general re-write of existing materials.

Some useful resources for understanding or implementing hygiene promotion:

Manuals:

- Curtis, V., and Kanki, B., (1998) *Happy, healthy and hygienic- How to set up a hygiene promotion programme: parts 1 – 4*. Unicef and London School of Hygiene and Tropical Medicine.
<http://www.unicef.org/programme/wes/pubs/glines/hman.pdf>
- DFID (1998) *Guidance Manual on Water Supply and Sanitation Programmes*. Published by WEDC for DFID. <http://www.lboro.ac.uk/well/resources/books-and-manuals/guidance-manual/guidance-manual.htm>
- Ferron, S., Morgan, J., and O'Reilly, M. (2000) *Hygiene Promotion: A Practical Manual for Relief and Development*. Intermediate Technology Publications London on behalf of *CARE International* (This manual is soon to be available on CD ROM)
- Sawyer, R., Simpson-Herbert, M., and Wood, S. (1998) *PHAST Step-by-Step Guide: a participatory approach for the control of diarrhoeal disease*. WHO: Geneva. Part1 (p.1-20):
http://www.who.int/water_sanitation_health/Environmental_sanit/PHAST/phastindex.htm

Other materials:

- Appleton, B., and van Wijk, C. (2003) *Hygiene Promotion*. A thematic overview paper for IRC. <http://www.irc.nl/page.php/16>
- Cairncross, S., and Curtis, V., (2003) *Hygiene and sanitation promotion*. http://www.wsscc.org/load.cfm?edit_id=149
- Curtis, V. (2003) *Hygiene Promotion A WELL fact sheet*
<http://www.lboro.ac.uk/well/resources/fact-sheets/fact-sheets-htm/hp.htm>
- Shortd, K. (2003) *Sustaining Hygiene Behaviours*. WELL Fact Sheet June 2003
<http://www.lboro.ac.uk/well/resources/fact-sheets/fact-sheets-pdf/shb.pdf>
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<http://www.unicef.org/programme/wes/pubs/behav/behav.htm>
- World Bank (2003) *Water Sanitation and Hygiene at a glance*
<http://wbln0018.worldbank.org/HDNet/hddocs.nsf/c840b59b6982d2498525670c004def60/9d1422d8016e85d885256b90005e1f76?OpenDocument#section5>
- <http://www.globalhandwashing.org/> (For information about the on-going work to build public-private partnerships for the promotion of hand washing with soap.)

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